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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|-----------------------|----------------------------|------------------|
| 10/629,498 | 07/29/2003 | Anthony J. Lochtefeld | ASC-061 | 6735 |
| 51414 | 7590 | 11/29/2006 | EXAMINER SMITH, BRADLEY | |
| GOODWIN PROCTER LLP PATENT ADMINISTRATOR EXCHANGE PLACE BOSTON, MA 02109-2881 | | | ART UNIT 2891 | |

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/629,498

Applicant(s)

LOCHTEFELD ET AL.

Examiner

Bradley K. Smith

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 55-65 and 84 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 55-65 and 84 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 55, 56, 58, 61, 62, 64, 65 and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fitzgerald. Fitzgerald discloses forming a first layer portion over a substrate, the first layer having a first equilibrium lattice constant; forming a regrowth layer over the first layer portion (602), the regrowth layer having a regrowth equilibrium lattice constant different from the first equilibrium lattice constant (604), wherein a plurality of misfit dislocations form at an interface between the first layer portion and the regrowth layer (inherent); forming a second layer over the regrowth layer (608); and forming a thickness of the regrowth layer to define a distance between a top surface of the second layer and the misfit dislocations corresponding to the selected placement of the misfit dislocations(see 0028 –0036 and 6A-6D). With regards to claim 56 and 84, Fitzgerald discloses the second material is strained and since the material is strained (same structure) it would inherently have a specific off current (material property) (see figure 6A-6D). With regards to claims 62 and 65, Fitzgerald discloses the regrowth layer difference between the first and second layer is less than

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about 1%-2% (see 0029). Furthermore Fitzgerald discloses forming a regrowth layer that is 500nm or less but does not specifically disclose forming a layer that is 450 nm, 210 nm or 130 nm. But the examiner contends that to claim a specific thickness would be obvious to one of ordinary skill in the art because the thickness is a result effective variable. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Therefore it would have been obvious to one of ordinary skill in the art to change the thickness of the regrowth layer, because it could change the placement of the misfit dislocations and would allow one to control the surface roughness [0028].

Claims 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fitzgerald. Fitzgerald discloses forming a first layer portion over a substrate, the first layer having a first equilibrium lattice constant; forming a regrowth layer over the first layer portion (602), the regrowth layer having a regrowth equilibrium lattice constant different from the first equilibrium lattice constant (604), wherein a plurality of misfit dislocations form at an interface between the first layer portion and the regrowth layer (inherent); forming a second layer over the regrowth layer (608); and selecting a thickness of the regrowth layer to define a distance between a top surface of the second layer and the misfit dislocations corresponding to the selected placement of the misfit dislocations(see 0028 –0036 and 6A-6D). Furthermore Fitzgerald discloses forming a regrowth layer that is 1% germanium difference but does not specifically disclose forming a layer that is has a germanium difference less than 1%. But the examiner

contends that to claim a specific thickness would be obvious to one of ordinary skill in the art because the germanium thickness is a result effective variable. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Therefore it would have been obvious to one of ordinary skill in the art to change the germanium of the regrowth layer, because it could change the placement and the amount of the misfit dislocations and would allow one to control the surface roughness [0028].

Claims 57, 60, and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fitzgerald. Fitzgerald discloses forming a first layer portion over a substrate, the first layer having a first equilibrium lattice constant; forming a regrowth layer over the first layer portion (602), the regrowth layer having a regrowth equilibrium lattice constant different from the first equilibrium lattice constant (604), wherein a plurality of misfit dislocations form at an interface between the first layer portion and the regrowth layer (inherent); forming a second layer over the regrowth layer (608); and selecting a thickness of the regrowth layer to define a distance between a top surface of the second layer and the misfit dislocations corresponding to the selected placement of the misfit dislocations(see 0028 –0036 and 6A-6D). Furthermore Fitzgerald discloses forming a regrowth layer that is a different composition but does not specifically disclose forming a layer that has a mismatch of lattice constant between .04% and .12% . But the examiner contends that to claim a mismatch of the lattice constants would be

obvious to one of ordinary skill in the art because mismatch in lattice constants is a result effective variable. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Therefore it would have been obvious to one of ordinary skill in the art to change the mismatch of lattice constants between the first and the regrowth layer, because it could directly affect the amount of dislocations and the placement of the dislocations and would allow one to control the surface roughness [0028].

Response to Arguments

Applicant's arguments with respect to claims 55-65 and 84 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

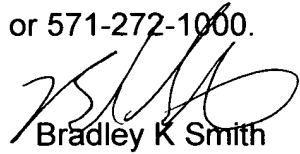
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley K. Smith whose telephone number is 571-272-1884. The examiner can normally be reached on 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Bradley K Smith
Primary Examiner
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